Femoral Neck Fractures

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Femoral Neck Fractures

- Epidemiology
- Mechanism of fracture
- Diagnosis
- Imaging
- Classification and management
- Prevention
Femoral Neck Fractures

Epidemiology

- **Incidence =** 86 : 100000
- **Life time risk:** Female 15%
  Male 5%
- **Black: white** 1 : 3
- **Higher prevalence further away from the equator**
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Epidemiology

- **Risk of hip fracture doubles from age 50**
- **Impending demographic disaster**
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Epidemiology

- Mortality
  - 20-50% † at 6 months
  - 20% † after 1 year
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Epidemiology

Risk factors

- Alcohol
- Inactivity
- Dementia
- BMD
- Caffeine
- Femoral neck length

Factors related to an increased risk of falls:
- Increased age
- Concurrent medical illness
- Drugs - tranquilizers, alcohol, antihypertensives
- Senile dementia or confusional states
- Physical disabilities or walking difficulties
- Lack of regular exercise
- Visual impairment
- Cardiac arrhythmias and cardiac disease
- Parkinson's disease and other neuromuscular diseases
- Electrolyte imbalance
- Hypothermia

Factors related to a reduction in bone strength:
- Drugs - corticosteroids, anticonvulsants, thyroxine, alcohol
- Cigarette smoking
- Lack of minerals (calcium, magnesium, fluoride)
- Vitamin D deficiency
- Physical inactivity - both in early life and later years
- Immobility, e.g. following a stroke
- Low body weight
- Malnutrition and low calcium intake, e.g. after gastrectomy or small-bowel disease
- White or Asian racial origin
- Nulliparity
- Late menarche
- Early menopause
- Oophorectomy
- Parathyroid disease
- Hyperthyroidism
- Hypercortisolism
- Hypogonadism
- Chronic renal failure
- Chronic liver disease
- Malignant disease of bone
- Pager's disease
- Radiotherapy to the hip area
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Mechanism of injury

- Direct blow on greater trochanter
- Lateral rotation of femur and neck impingement
- Cyclical loading and micro-fractures → stress fracture
- Pathological fracture
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Mechanism of injury
Cummings + Nevitt (1989)

1. Must land on or near hip
2. Inactive protective response
3. Reduced action of shock absorbers
4. Bone of insufficient strength to absorb residual energy
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Mechanism of injury
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Diagnosis

“Hip fracture another part that has failed in the patient.”

History

- Tripped or other
- Other medical problems
- Medication
- Previous mobility
- Abbreviated mental test score
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Diagnosis

Examination

- Short and externally rotated leg
- Bruising
- Other injuries (Head, wrist, neck, humerus)
- Sites of sepsis
- Malignancy
- Other medical conditions
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Diagnosis

Imaging

- AP Pelvic with leg 10 degrees internal rotation
- Lateral
- In doubt center X-Ray on affected hip
- Alter penetration
- Bone scan, MRI
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Treatment

- Analgesia
- Fluids
- ? Splinting / Traction
- ? Aspiration
- Surgery
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Classification
**FEMORAL NECK FRACTURES**

**Paediatric neck of femur fractures**

- **Delbent and Calonna**

  1. Trans-epiphyseal (Often with dislocation) 100 %
  2. Trans-cervical 16-78 %
  3. Cervico-trochanteric 25 %
  4. Trochanteric Rare
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Classification
(Extra capsular fractures)

- Evans (1949)
- Jensen and Michaelson
- Fielding (1966)
- Sensheimer (1978)
- AO
- Zickel (1976)
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Intracapsular Fractures

Blood supply

1. Extracapsular ring
   (Med /Lat Circumflex)
2. Ascending capsular branches
3. Foveal branch
4. Endosteal supply
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Intracapsular Fractures
Femoral Neck Fractures

Intracapsular Fractures

Non-displaced (Garden 1-2) ORIF
(Non-union 5%, AVN 10%)

Displaced (Garden 3-4) Bad: Hemi-arthroplasty
Good: THR
(Non-union 10-30%, AVN 15-33.5%)
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Intracapsular Fractures

Indications for THR

- Delay Dx
- Rheumatoid Arthritis
- Paget’s
- Malignancy
- Metabolic bone disease
- Previous coxarthrosis
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Extracapsular Fractures
Femoral Neck Fractures

Functional recovery

- **Goal is to achieve pre fracture level of activity**
  - 15-40% Institutionalised
  - 50-60% Pre-fracture ambulation
  - 50-80% Independent of walking aids
  - Majority require assistance with ADL
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Prevention

- HRT
- Biphosphonates
- Vitamin D and calcium supplements
- Diet, lifestyle, exercise
- Protection
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